

REMARKS

In response to the Office Action mailed March 7, 2008, Applicants kindly request reconsideration of the rejections contained in the Office Action.

Initially, the Examiner is thanked for his courtesy in granting and conducting the interview of July 1, 2008. Upon clarification of the Examiner's position, the above amendments have now been presented so as to clearly define over the interpretation being applied by the Examiner.

Thus, claim 47 has now been amended to recite that the component feed tray is supported at a tray placement position so as to be vertically displaceable with respect to a surface on which the component feed tray is supported, and that the electronic components are disposed on the component feed tray so as to be displaceable relative to the component feed tray upon leap-up of the component feed tray. These amendment are supported by the discussion in the Background of the Invention, noting for example page 9, line 2 et seq. of the original specification, which establishes the context of the invention. That is, the Background establishes that the problem being addressed is the possibility of vertical movement or leap-up of the tray, thus causing displacement of the electronic components. These changes, and new claim 53, are also supported by the discussion of the third embodiment beginning on page 91 and continuing to the end of the original specification.

The invention and the distinctions over the prior art will be discussed below.

The Present Invention

The instant invention pertains to an electronic component feeder and a method for utilizing the electronic component feeder. Such an electronic component feeder and method for its use are generally known in the art, but suffer from drawbacks as expressed on pages 1-11 of the original specification.

Specifically, the inventive method as reflected by independent claim 47 for feeding electronic components to be mounted onto a board, comprises, from a component feed tray in

which electronic components are arranged, picking up one of the electronic components by using component holding and suction pressure of a component suction and holding member such that this electronic component is sucked and held by the component suction and holding member, wherein the component holding and suction pressure is not lower than a suction pressure capable of sucking and holding the electronic component, and **is lower than a suction pressure capable of sucking and holding the component feed tray**. This aspect is not disclosed by Mimata or Stout, the references cited by the Examiner.

That is, an object of the present invention is to provide a feeding method that is capable of achieving efficient feeding of the electronic components by preventing leap-up of the components, otherwise caused by erroneous suction of the component feed tray by a component suction and holding member, when the component suction and holding member is used to pick up a component from the feed tray. According to the instant invention, even when such erroneous suction of the component feed tray occurs, by picking up the electronic component using a suction pressure that is **not lower than** a suction pressure capable of sucking and holding the electronic component, and **lower than** a suction pressure capable of sucking and holding the component feed tray, the erroneously sucked component feed tray is not uplifted upon lifting of the component suction and holding member, and accordingly, an occurrence of leap-up of the electronic components, which would otherwise result due to the component feed tray being uplifted, can be prevented. Despite the positions taken by the Examiner in the Final Office Action, there is no disclosure that serves to anticipate claim 47 and its dependent claims in Mimata or Stout.

The Claims Clearly Define Over Mimata

Claim 47

The Examiner maintains the position that the suction pressure used to suction and hold one of the electronic components is lower than a suction pressure capable of sucking and holding the component feed tray. However, this position is without any basis in the reference.

In Mimata, a wafer sheet 2 is positioned beneath a frame feeder 6, as discussed in the Background. In column 4, it is discussed that when the suction chucking nozzle 24 approaches the die 1 to be picked up, a push-up needle 4 is raised, which causes the die 1 to contact the suction chucking nozzle 24; see lines 8-13. Noting lines 37-44 of column 4, the dies 1 are picked up from a wafer sheet 2, but it is recognized that the invention can be used for picking up dies in a tray. (It is noted that the invention of Mimata is directed toward the reduction of the weight of constituent elements that are driven upward and downward, and generally bears little relation to the present invention.)

There is no disclosure in Mimata of the limitation in claim 47 of the component holding and suction pressure, in addition to being not lower than that required to be capable of sucking and holding the one of the electronic components, be lower than a suction pressure capable of sucking and holding the component feed tray. Mimata recognizes no concern, as expressed in with the present invention, of avoiding the erroneous suction and uplifting of the component feed tray.

The Examiner states that, “as the tray is mounted to the machine, there would have to be a significant amount of vacuum pressure to lift the tray that would break the small electric components and therefore the pressure is high enough to pick the components up but not the tray.” However, there are several problems with this attempt at construing Mimata to correspond to the claim language. First, it assumes that the tray is fixed to the machine; however, there is no basis for any such assumption, and no evidence to indicate that it is fixed. For this reason alone, the rejection is submitted to be improper. Second, the claim is not requiring the pressure be lower than the suction pressure required to suction and hold the component feed tray and the machine itself, but just the component feed tray. Even if the Examiner could provide evidence to establish that the tray is fixed to the machine (which has so far not been provided), and even if it could then be reasonably concluded that the pressure must be lower than that required to pick up the tray and the machine, this does not make the pressure “lower than a suction pressure capable of sucking and holding said component feed tray” as required by claim 47.

The above amendment to claim 47 makes it clear that the component feed tray is supported at the tray placement position so that it is vertically displaceable and that the electronic components are on the tray so that leap-up of the tray can cause displacement of the components. Thus, even if the Examiner's interpretation is accepted, the claim language now clearly avoid such an interpretation. This further emphasized by new claim 53 as well.

For these reasons, claim 47 is not properly anticipated by Mimata. Withdrawal of the rejection is accordingly requested.

Claim 48

Among other things, claim 48 requires “creating suction pressure...such that the suction pressure reaches said component holding and suction pressure **when** said component suction and holding member starts ascending **after** being brought into contact with said one of said electronic components” (emphasis added). In the Office Action, the Examiner states that this occurs in Mimata, with reference to column 4, lines 8-13. However, Mimata, including the cited portion, is completely silent as to any such creation of the suction pressure. In claim 48, it is required that the suction pressure is reached at the start of ascent of the holding member after contact with the component; Mimata has no such operation disclosed, and there is no basis for concluding that it is disclosed. For this reason as well, the rejection must be withdrawn.

Claim 49

This claim requires determining a time for creating the suction pressure in consideration of an amount of time necessary for the suction pressure to reach the component holding and suction pressure from when the suction pressure is created. Mimata has no such operation disclosed, and there is no basis for concluding that it is disclosed. For this reason as well, the rejection must be withdrawn.

Claim 50

This claim requires creating the suction pressure after the holding member is brought into contact with the electronic component. Mimata has no such operation disclosed, and there is no basis for concluding that it is disclosed. For this reason as well, the rejection must be withdrawn.

Claim 51

This claim requires determining a time for lowering the component suction and holding member according to a size or weight of the component to prevent leaping up of the component. Mimata has no such operation disclosed, and there is no basis for concluding that it is disclosed. For this reason as well, the rejection must be withdrawn.

The Claims Clearly Define Over Stout

Claim 47

Stout discloses a die pick mechanism for automatic assembly of semiconductor devices; however, Stout does not employ a "component feed tray". Rather, Stout only discloses a die pick-up mechanism by which dies are picked up from a wafer 63. Such a wafer-sheet is completely different from a feed tray on which components are merely placed and not adhered thereto. It is appreciated that the Examiner has equated member 61 of Stout to the claimed feed tray; however, 61 is disclosed to be an x-y table and not a feed tray. Please see column 4, lines 23-59. In any case, nowhere does Stout disclose or suggest that the suction pressure of quill 10 is "lower than" the suction pressure capable of sucking and holding a component feed tray. The insufficiency of the disclosure of Stout stems from the same reasons as discussed above with respect to Mimata. There is simply no evidence in Stout to support meeting the claim limitation. Thus, claim 47 is not anticipated by Stout, and the rejection must be withdrawn.

Claim 52

The Examiner cites Stout's discussion of column 2, lines 46-65, to support claim 52's requirement that the component holding and suction pressure be determined according to the size or weight of the component. However, this discussion of Stout relates to when the die is dropped by the pick up mechanism, and the resulting force necessary for application of the die to the lead frame. This has nothing whatsoever to do with the suction pressure. For this reason as well, the Final Office Action must be withdrawn.

Conclusion

The prior art cited by the Examiner fails to provide evidence of anticipation of claims 47-53, for the reasons as have been given above. As such, the rejection must be withdrawn, and such is requested.

Further, in view of the above amendments and remarks, it is respectfully submitted that the present application is in condition for allowance and a Notice of Allowance is earnestly solicited.

If after reviewing this Amendment, the Examiner believes that any issues remain which must be resolved before the application can be passed to issue, the Examiner is invited to contact the Applicants' undersigned representative by telephone to resolve such issues.

Respectfully submitted,

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